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SOME ASPECTS OF LIFE INSURANCE.

In all institutions for the sale of insurances on life, life annuities, or endowments,* a risk, either positive or negative—that is, either against or in favor of the institution—is to be considered. The great defect in the early history of the business was that, in fixing the sums to be paid for the benefits, the risks were either not taken into consideration at all, or not settled by any rational rule.

A rational rule is possible, and in fact was substantially discovered and applied by the Rev. Richard Price, a particular friend of Dr. Benjamin Franklin, and who, but for his ill-health, would probably have been the first Secretary of the Treasury of the United States. It has been slightly improved by observation since, and sufficiently for all life insurance purposes.

In all life insurance calculations based on a mortality table, except when, by the old trick of "gross valuation," all the expected funds are discounted into real and existing assets, and the whole term of the policy is in some sense considered as a unit, a policy year is considered as the unit of time during which the risk remains constant, and is to be paid for, or is supposed to be fully paid for, by its amount multiplied by the tabular fraction expressing the probability of dying in that year of age, and discounted one year, if paid in advance. The rate of mortality is always assumed high enough, and the interest low enough, with a reasonable addition to the resulting net premium for expenses, to make such payment generally more than sufficient. When the advance premium, as well as the face of the policy, is the same from year to year, and consequently interest is deeply concerned, a year is the unit of time on which interest is compounded; but when the yearly premium and face of the policy do not vary, it by no means follows that the company's risk does not vary from year to year.

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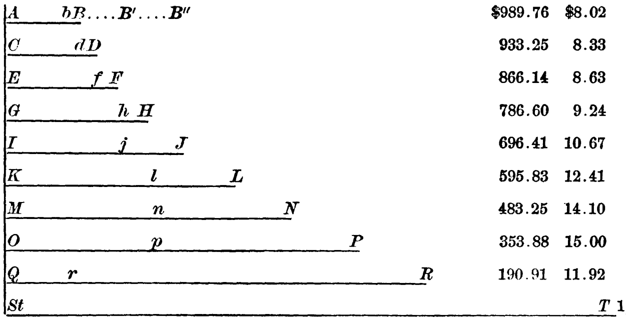
*Pure endowment is always a negative risk, but practically it is almost always combined with insurance in the same policy, in which case, as will be presently shown, it is simpler and more intelligible to eliminate the negative risks, and consider the combined policy as consisting of a series of yearly insurances, with an increasing bank accumulation, operating every year as so much self-insurance.

The table itself, without any calculation, gives the normal cost, at every age, of insuring one dollar for one year, which, if discounted one year on account of advance payment, is sometimes called the net natural premium. But if one at the age of thirty should get insured for his whole life, paying only the natural premium of each year in advance, and should not die till his hundredth year, he would have paid $9,224.73 on a policy for $1,000. But if he should have paid the commuted level premium (by the Actuaries' Table at four per cent.), and lived to the same age, he would have paid only $1,188.04 for $1,000. Expenses are thrown out in both cases, and the mortality is supposed to be exactly that of the table. The difference results from the early excesses of the commuted premiums being accumulated at four per cent. per annum. This is something for the members of coöperative life insurance associations, who pay for death-claims only as they occur, to think of. The pure insurance method has the advantage of endowment insurance only when the insured dies early.



Age.	*Risk of Co.*	*Nor. Cost.*	*Self-Ins.*	*Nat. Prem. per* $1,000.
30	$989.76	$8.02	$10.24	$8.10
35	933.25	8.33	66.85	8.93
40	866.14	8.63	133.96	9.96
45	786.60	9.24	213.40	11.74
50	696.41	10.67	303.59	15.33
55	595.83	12.41	404.17	20.83
60	483.25	14.10	516.75	29.17
65	353.88	15.00	646.12	42.39
70	190.91	11.92	809.09	62.44
75			1,000.00	91.89

A whole life policy is not the policy to be taken by any sensible person at thirty, or perhaps any other age. Its premium is calculated as if it were an endowment insurance, payable at one hundred or previous death; but the terms of the policy do not make it payable till death, no matter how far beyond the age of one hundred that may be. At thirty an endowment insurance for $1,000, payable at seventy-five or previous death, may be had by the payment of forty-five annual premiums, each not quite one dollar greater than the net annual premium for a whole life-policy, being $17.85 instead of $16.97. This is because the excess goes to the self-insurance fund, which decreases the company's risk and reduces it to zero at 75.

A very simple diagram, with a few figures, will illustrate this policy better than pages of words. Let the line AS represent forty-five years, divided by the points C, E, G, etc., into nine half decades. Let AB′ represent the net annual premium, which is $17.85, and AB″ the gross premium, which is usually about $25, the difference being a provision for expenses and excessive mortality, which, if not required, comes back as "dividend." The lines AB, CD, EF—ST, represent the net natural premiums per $1,000 of risk, at the ages thirty, thirty-five, forty, etc. If all the forty-five net natural premiums were paid, the payments would amount to $1,198.23, and with $7.15 a year for expenses, etc., to $1,519.98, and yet there would be no endowment on reaching the age of seventy-five; but to secure the benefit, if death should occur in that year, another net natural premium of $91.89 would have to be paid, with something for expenses. But if the commuted premium of $17.85, with $7.15 for expenses, should be paid in advance every year from the start, then only $1,125 would be paid in all, and an endowment of $1,000 would be secured on reaching seventy-five.

The reason of this is obvious when we notice how the legal four per cent. reserve, at the end of the policy year, or self-insurance, diminishes the company's risk by just so much, so that the lines A*b*, C*d*, E*f*, G*h*, etc., represent the whole normal costs of the company's risk each year at those respective ages, no risk at all being run in the last year. If the lines for the intervening ages were drawn, those representing the net natural premiums for $1,000 of risk would all terminate in a curve drawn through B, D, F, etc., to T; and as representing the normal costs of the company's risks, they would terminate in a curve drawn through the points *b*, *d*, *f*, *h*, etc., to *t*, which coincides with S. Of the whole $803.25 of net level annual premiums paid, it takes $477.04 to pay the normal costs of the company's risks, leaving $326.21 for deposits in the company's bank; and if this bank account does not grow to $1,000 in forty-five years, it will be because either an interest of four per cent. per annum cannot be realized, or $7.15 per annum will not cover expenses and extra mortality, or because deficiency occurs in both respects. There must, however, be bad, if not dishonest, management to have any failure of the endowment with such payments. I must beg the reader's pardon for being so painfully elementary, but many managers of immense companies deny that there is any banking element in the business at all!

Banking or no banking, equity requires that each policy should contribute to the death-claims of each year in the ratio of the risk the company runs upon it in that year. If there is a bank account (reserve at the end of the policy-year), the sum at the company's risk is the difference between that and the face of the policy, and its value is determined by the natural premium per one thousand dollars at the present age of the insured. If there is no bank account, then the value of the risk is the face of the policy multiplied by the fraction expressing the probability of the insured dying in that year, or the net natural premium per dollar for his present age.

Rev. Dr. Price's great reform in life insurance, by which the natural premiums were so commuted as to necessitate banking, had one serious imperfection. He did not, as he might easily have done, provide any rule for the equitable surrender of the policy. The company was left to exact, as a forfeiture for breach of contract, the whole or such part of the bank accumulation as it pleased. It would ordinarily promise, outside of the policy, in some general prospectus, to pay an equitable surrender value, if applied for, the policy still being in force; but, till some very recent legislation in Massachusetts, no rule of surrender has ever been proposed founded on any principle of equity. The practice, on the contrary, has always been so far the reverse of equity as to make the surrender charge the larger, the smaller the future probable contributions of the policy to death-claims may have become. In other words, the longer a policy-holder has continued to pay, the more it costs him to withdraw. Dr. Price's method of commuting the natural increasing premiums into the level banking premium is simply discounting the future premiums, each by itself, by both mortality and interest, and dividing the sum of the present values by the present value of a one dollar annuity for the annual premium. By a precisely similar calculation, and equally certain, the present value of all the probable future contributions of any policy to the death-claims is ascertained, and it is technically called "insurance value." On every banking policy fit to be taken, this value grows less from the start, and even on a whole life policy it diminishes rapidly after the age of fifty-eight or sixty. It hardly needs saying, that if the health of an insured person has become impaired, the company can better afford to pay him his full bank account and let him go, than to receive his premium and continue to insure. The theory is, that no impaired life will let a policy lapse, or apply for surrender, and therefore the company must make as much as possible out of the healthy, who lapse or surrender. But the statistics of the business show nothing of the sort. For, after half or more of the policies in any large company have lapsed or been surrendered, the remaining lives do not show a mortality greater than that of the table, even on those lives that have been longest insured. Undoubtedly, in justice and prudence, there should be a surrender charge deducted from the bank account on every healthy life that withdraws, and the balance only should be paid as surrender value,—either in cash down or a cash annuity. And, in view of the statistics, it is hardly possible that the maximum surrender charge need exceed eight per cent. of the "insurance value" of the policy at the time of surrender or lapse. Such a surrender charge is more than any well-managed company is willing to give to procure as much new insurance value.

What would be exceedingly amusing to the public, if commonly understood, is that the executive managers of life insurance companies that hold tens of millions in their banks so wish to keep the insurance and banking undistinguishably mixed that they carefully avoid using or alluding to the terms "self-insurance" and "insurance value." "Oh, no, we don't do any banking," said a life insurance president, with more than $30,000,000 in bank, when asked to give an equitable cash surrender value on a policy which had more than half its face in his bank.

A "business man," dealing in an imperishable commodity, who should refuse to buy back the goods he had sold, when by doing so he could make as large a profit as he did in selling them, would be accused either of stupidity or commercial superstition. The life insurance managers who hold in aggregate about $400,000,000 of cash assets in their banks—every cent of it individual "self-insurance"—have yet to show why they should make their business an exception to the plainest dictates of common sense, common honesty, and public convenience. Are they ready to confess that they consider their vast "mutual" institutions, in any sense, mere milch cows for themselves? No intelligent person can deny, or wishes to deny, that the insurance they do, and the banking they do, are both exceedingly valuable, if not indispensable, to civilized society. They have policies in force amounting probably to something more than $1,500,000,000 on about half a million of lives, all of which are reasonably sure of being paid at maturity. But is that any reason why they should pretend to be insuring $1,500,000,000 while they have in bank $400,000,000 of individual self-insurance? They are really insuring but about $1,100,000,000. Their working expenses were returned to the Census Bureau for 1879 as a little over $13,000,000, and the death-claims paid as $23,000,000. Allowing $2,000,000 as the expense of the banking business, it took $11,000,000 of expense to manage the $1,100,000,000 of insurance, or to get, not the $23,000,000, but that sum less the self-insurance, to the widows and orphans. Now, no man knows, for no company ever tells, how much, paid on a policy, comes from the self-insurance fund in bank, and how much from the insurance premiums of the year—the company's bet that the insured would not die in that year. The probability, or reasonable guess, is that about four of the twenty-three millions paid for death-claims came from the bank, and $19,000,000 from insurance. If so, as far as the insurance is concerned, it took $30 to carry $19 to the beneficiary, on the average, or $1,598.70 to carry $1,000. It would seem that a well-established company must do a little better than this to hold the public confidence permanently. Some of the smaller "coöperative" companies, as they are called—even when operating on the crudest of equity—make a better showing than this. The eighth annual report of one such, consisting of 485 members, is before me, in which it took $5,166.47 to carry $4,425 to two beneficiaries, or $1,167.50 to convey $1,000.

One very small swallow does not make a summer, to be sure, but the "winter of discontent" among the holders of 1,261,905 policies returned to the Census Bureau as having lapsed or been surrendered during the decade from 1870 to 1880, must have made a vast flock of swallows of the sort above alluded to; and whether their economy of operation is more or less than that of the banking insurance companies, plainly it is possible for them to make three dollars pay more than two to the beneficiary. And, summer or no summer, the multiplication of swallows will go on, till the holders of millions in life insurance banks consent to give equitable surrender values, and let the people know exactly how much it costs, on the average, to get a dollar of insurance or a dollar of endowment to the beneficiary.

I can only glance at a question which is now perhaps the most important before the life insurance banks,— which is, How should their reserves be invested? If they cannot be made to yield, on the average, a little more than four per cent., or to net that, a larger part of the premium must be held in reserve,— enough to amount to the same at a lower rate of interest. Is there likely to come any necessity for such a change? So far as I can see, no. The following table, derived from the census, gives the mode of investment and the rate of annual income, under five heads, including about ninety-nine per cent. of the reserves for the year 1879:

Investments.	*Amount.*	*Percentage.*	*Interest per cent.*
Loans on real estate security	$184,753,300	44.86	7.06
Cost value of bonds and stocks	115,302,677	28.00	5.83
Cost value of real estate	63,829,691	15.05	2.45
Premium notes	30,527,151	7.41	6.08
Loans on bonds, stocks, etc.	14,107,157	3.43	5.38
	$408,519,976	99.02	6.15½

The only remark I have to make on this is, that the people who most need life insurance in this country are also most in need of homes in fee simple. They have abundantly proved, in many of our own cities as well as in larger cities abroad, that to escape rent they can well afford to pay an interest of seven per cent. per annum, or higher, on the value of a suburban residence, with a garden, where there is less chance of wife and children dying before they can receive any benefit from a policy. Such persons are safe borrowers, and with an endowment insurance and a small margin, sure to sweep off the debt. Why should not the life company build for them?

ELIZUR WRIGHT.